REMARKS

Claims 1-6 are pending in the present application. Claim 1 is herein amended. No new matter has been entered.

Claim Rejections - 35 U.S.C. § 102

Claims 1-6 were rejected under 35 U.S.C. § 102(b) as being anticipated by **Majima** (WO 01/092417 as evidenced by U.S. 6,780,482, which is used as an equivalent English document). Favorable reconsideration is requested.

Claim 1 has been amended to recite that that the half value width of recrystallization peak is not more that 0.22. Support for this amendment is in the specification at page 10, lines 12-17.

Applicants respectfully submit that Majima does not disclose, either expressly or inherently, a film showing "a half value width of recrystallization peak obtained by a differential scanning calorimeter (DSC) by lowering temperature of not more than 0.22" as recited in amended claim 1.

The half value width of recrystallization peak (1/h) (hereinafter referred to as "half value width") of the film of the present invention serves as an indicator of the rate of crystallization during the temperature decrease in the recrystallization process of the polyester film. The smaller the value is, the more quickly the (heat generation) thermolysis occurs, indicating a rapid crystallization rate. (Specification, page 9, line 8 to page 10, line 11.) The smaller the half value width of a film is, the less frequently the whitening occurs when the film is heat-treated to near or not lower than the melting point and then cooled, as well as the greater the scratch resistance of the film becomes. (Specification, page 32, lines 1-10.)

Amended claim 1 is directed to a film having a half value width of not more than 0.22, and the amendment limits the film of original claim 1 to one that attains both anti-whitening property (whitening resistance) and scratch resistance at higher levels than those attained by the film having a half value width of not more than 0.25. Due to the amendment to claim 1, examples 3, 9, 10 and 12 are now referred to as comparative examples (reference examples).

It can be understood from Table 2 of the specification that in comparison with the films of examples 3, 9, 10 and 12, the films of examples 1, 2, 4, 5, 7, 8 and 11 attain both anti-whitening property (whitening resistance) and scratch resistance at higher levels. This is because the films of examples 1, 2, 4, 5, 7, 8 and 11 were produced by feeding polyester A (PET) and polyester B (PBT, PTT or PEN) into different extruders for separate melting, feeding the melted polyester A and polyester B into an extruder having a small compression ratio, and extruding a film under conditions where the resin temperature is controlled to be not more than 265°C and no area of not less than 275°C is produced in the temperature setting from the cylinder part to the T-die. (Specification, page 15, line 27 to page 16, line 19.) As a result, the polyester A and polyester B are dispersed in the film in a relatively large crystal phase, *i.e.*, a high level of crude mixing.

In contrast, although example 12 shows that a film having a small half value width of recrystallization peak (1/h) can be produced using a single extruder having a screw with a compression part (compression zone) of a double flight type, a film having a half value width of not more than 0.25 could not be produced. In other words, the film having a half value width of not more than 0.22 of amended claim 1 can be produced only by separately melting polyester A

(PET) and polyester (B) (PBT, PTT or PEN) in different extruders, introducing the melted polyester A and polyester B into an extruder having a small compression ratio, and suitably controlling the resin temperature and the extruder temperature.

The Office Action states that the relationship of the compression ratio and L/D of an extruder and the half value width is not described. (Office Action, page 3.) However, the present specification states:

> As an extruder to mix the melted polyester A and polyester B, since uniform mixing of the melted polyester A and melted polyester B to the degree they become compatible with each other (transesterification) is not preferable, one having a small compression ratio is preferably used. To be specific, one having a compression ratio of 1.1-3.8 (preferably 1.3-3.0) is preferable.

(Specification, page 15, lines 27-33.)

The greater the compression ratio is, the greater the amount of self heat generation is in the compression part (compression zone), and the two kinds of the melted polyesters come into contact with each other at higher temperatures, resulting in an enhanced compatibility and difficulty in attaining the state of "crude mixing." As a result, the half value width is increased. Moreover, the greater the L/D of an extruder is the more likely the kneading of the ingredients proceeds.

The Specification at page 15, line 33 to page 16, line 8 states:

> It is also preferable to use an extruder having an L/D of 20-35 (preferably 25-30), from the aspect of crude mixing of polyester A and polyester B.

This passage teaches that the mixing (kneading) of the 2 types of the polyesters excessively progresses when the L/D is excessively great, thereby making it difficult to attain the state of

being "crudely mixed." The compression ratio and the L/D of the extruder (extruder III) used in the production of the films in examples 1, 2, 4, 5, 7, 8 and 11 are 1.5 and 25, respectively.

With regard to extruders, it is common technical knowledge that the greater the compression ratio is, the greater the amount of self heat generation is in the compression part (compression zone), and the greater the L/D is, the more likely the kneading of the ingredients progresses.

Majima teaches that when the PBT and PET are melt-mixed at a higher melt temperature or under higher shearing conditions for an extended period of time, the ester exchange reaction and a decomposition reaction proceed, so that the characteristics of the mixture are drastically changed, (col. 9, line 66 to col. 10, line 4), and discloses a method in which mixing is performed after separately melting the ingredients in different extruders (col. 8, lines 58-63). However, Majima fails to teach the extruder requirement and temperature conditions in producing a film by mixing the 2 types of polyesters that are melted in separate extruders.

In the examples in Majima, the 2 types of polyesters are dry-blended and formed into a film by melt-mixing using a single extruder. Furthermore, Majima, teaches that:

> For production of the film according to the present invention, the polyesters (I) and (II) are blended in proper ratio, and melt-mixed at a temperature of 250 to 280° C for 3 to 15 minutes by means of an extruder. Then, the melt mixture is extruder through a T-die into a sheet form.

(Col. 10, lines 33-37.)

Therefore, Majima does not disclose technical means to obtain the film having a half value width of not more than 0.22 of the present invention and the half value width of not more than 0.22 is not inherent.

Majima uses an Ester Exchange Index to show the extent of the progress of ester exchange during the melt-mixing of the 2 types of polyesters. (Col. 14, lines 17-32.) Among examples 1-13, the ester exchange index of the film in example 11 is 3%. This film has the least progressed ester exchange and is one of the preferable films. The film is composed of PET (Tm=255°C) and PBT (Tm=223°C) mixed in a proportion of 40/60 (wt.%) and such a polyester composition is similar to that of the film of example 12 of the present application.

Example 12 of the present application is an example for showing that even when a single extruder is used to produce a film, the half value width of recrystallization peak (l/h) of a film can be controlled to as small as 0.25 by suitably controlling the compression ratio and the resin temperature.

Applicants have performed a follow-up test in connection with example 11 of Majima (*See* enclosed Declaration.) Since Majima does not specify the type of extruder, a screw-type extruder with a 65 mmφ single screw, L/D=25 and a compression ratio of 3.5 that is usually used in a PET film-forming test was used. As evidence that an extruder usually used in PET film formation has a compression ratio of 3.5, Applicants enclose herewith a copy of *Extrusion Molding Technique Basic Course (Introduction Course)*, Japan Society of Plastics Technology, page 17, Table 1-1, Selection of Screw by Resin. Table 1-1 is quoted from *Easy To Extrusion Molding*, Sanko Publishing Co., Ltd, January 1999, which was used in the Basic Course.

As shown in the declaration, the half value width (l/h) of the film of example 11 of Majima obtained in the follow-up test is 0.50, and it is clear that a film having a half value width (l/h) of not more than 0.22 cannot be obtained.

As described above, it is difficult to produce with the use of a single extruder the film of amended claim 1 of the present application, which has a half value width of recrystallization peak (l/h) of not more than 0.22 and attains both anti-whitening property (whitening resistance) and scratch resistance at high levels. The film can be produced only by separately melting polyester A (PET) and polyester B (PBT, PTT or PEN) in different extruders, feeding the melted polyester A and polyester B into an extruder having a small compression ratio, and suitably controlling the resin temperature and the extruder temperature. Thus, the half value width (1/h) of the film of Majima, which fails to disclose the extruder requirements and the temperature conditions for producing a film by mixing 2 types of polyesters that are melted in separate extruders, has been shown to be greater than 0.22.

Therefore, Majima does not disclose the elements as recited in claim 1 either expressly or inherently.

For at least the foregoing reasons, claim 1 is patentable over the cited reference and claims 2-6 are patentable by virtue of their dependence from claim 1. Accordingly, withdrawal of the rejection of claims 1-6 is hereby solicited.

In view of the aforementioned amendments and accompanying remarks, Applicants submit that that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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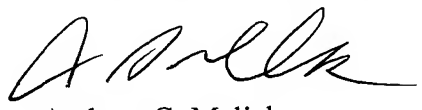

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AGM/adp
Enclosure: Declaration Under 37 C.F.R. § 1.132
Extrusion Molding Technique Basic Course(Introduction Course), Japan Society of Plastics Technology, page 17, Table 1-1